ANGLER HARVEST SURVEY

ETHEL LAKE 2012

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Key Findings

- Angling effort increased nearly 40% over previous surveys. An estimated 724 anglers spent 2,271 hours of angling effort on Ethel Lake in summer 2012. This is an average angling effort for a Yukon fishery and equal to 0.49 hours of angling effort per hectare.
- Lake trout fishing quality (number of fish caught per hour) is slightly below the Yukon average. Lake trout catch rates showed a large decline between 1990 and 1995, and while trends since 1995 are less certain, a possible slight decline since 2003.
- We estimate anglers caught 271 lake trout and released 51% of them. The estimated angler harvest was 139 lake trout, or 204 kg.
- Including both harvest and estimated incidental mortality (death) from catch and release, the total estimated harvest was 224 kg of lake trout. This amount is less than the estimated Optimal Sustainable Yield of about 300 kg.
- Based on the known harvest level in the recreational fishery (224 kg), current fishing quality should be maintained in Ethel Lake.
- If total lake trout harvest from Ethel Lake exceeds 300 kg annually, recovery of this depleted lake trout stock may be impeded.

Table of Contents

Acknowledgements ..... Inside Cover
Key Findings i
Table of Contents ii
List of Figures iii
List of Tables iii
Introduction 1
Harvest Regulations 2
Methods 3
  Survey 3
  Analysis 4
  Lake Productivity 4
  2012 Ethel Lake Survey 4
Results of the 2012 Survey 5
  Effort 5
  Fishing Methods 5
  Methods of Access 5
  Guided Anglers 5
  Angler Origin 6
  Visitor Type 6
  Weather 6
  Catch and Harvest 7
  Biological Data 7
Comparison with Previous Surveys 10
  Effort 10
  Fishing Methods 10
  Methods of Access 11
  Guided Anglers 11
  Angler Origin 11
  Visitor Type 12
  Weather 12
  Catch and Harvest 12
Fishery Sustainability 14
Literature Cited 16
APPENDIX 1 – Ethel Lake Angling Regulation Changes 1989 to 2012. 17
APPENDIX 2 – 2012 Results: Comparisons between periods. 19
  Effort 19
  Fishing Methods 19
  Guided Anglers 19
  Angler Origin 19
  Visitor Type 20
  Catch 20

List of Figures

Figure 1. Location of Ethel Lake, Yukon. 1
Figure 2. Lengths of lake trout caught by anglers. 8
Figure 3. Ages of lake trout caught by anglers. 8

Figure 2. 1. Estimated angler effort per day, Ethel Lake..... 19

List of Tables

Table 1. Fishing methods. 5
Table 2. Angler access methods. 5
Table 3. Angler origin. 6
Table 4. Angler visitor type. 6
Table 5. Sample day weather. 6
Table 6. Angler catch and harvest. 7
Table 7. Estimated catch per unit of effort (fish/hour). 7
Table 8. Sampled lake trout stomach contents. 9
Table 9. Total estimated angler hours. 10
Table 10. Fishing methods (percent of parties). 10
Table 11. Methods of access (percent of parties). 11
Table 12. Origin of anglers (percent of parties). 11
Table 13. Visitor type (percent of parties). 12
Table 14. Weather effects on angling activity (percent of parties). 12
Table 15. Estimated number of fish caught, fish kept and the retention rate. 13
Table 16. Estimated catch per unit of effort (fish/hour). 13
Table 17. Estimated summer lake trout harvest by anglers. 14

Table 2.1. Estimated catch per unit of effort (fish/hour) by period. 20

Introduction

We conduct angler harvest surveys, also called creel surveys, on a number of Yukon recreational fisheries each year. We use these surveys, together with other fish and fishery-related assessments, to find out if the harvest of fish from the lake is sustainable. The Yukon Department of Environment tries to conduct angler harvest surveys on key fisheries either every 5 years or according to angler patterns and management concerns. The results of the surveys directly contribute to management decisions that make sure fisheries are sustainable over the long term.

Ethel Lake is a medium-large lake located in central Yukon within the traditional territory of the Na-cho Nyak Dun (NND) First Nation, approximately 20 kilometres east of Stewart Crossing (Figure 1). A 24 kilometer long seasonal access road leads east off the Klondike Highway approximately 10 kilometers south of Stewart Crossing. The lake lies in an east-west aspect, is approximately 21 kilometers long, and covers an area of 4,610 hectares. Mean depth is 30.9 meters and maximum depth is 62 meters. The lake is fed by Ethel Creek, Sether Creek, and several other small, unnamed creeks. Ethel Creek drains the lake eastwards into Nogold Creek which flows to the Stewart River, part of the Yukon River Watershed. Fish species present in Ethel Lake include lake trout, northern pike, Arctic grayling, lake whitefish, round whitefish, burbot, and slimy sculpin.

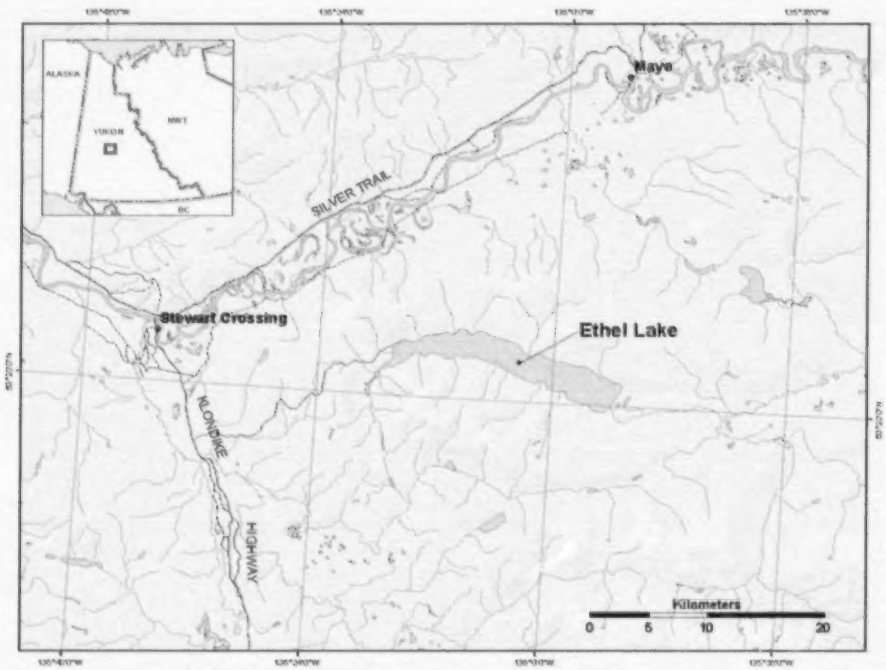

Figure 1. Location of Ethel Lake, Yukon.

Ethel Lake is one of only a few lake trout-containing lakes readily accessible to residents of Dawson, Stewart Crossing and Mayo, so it is popular for recreational use, particularly during the summer months. A Yukon Government campground is located at the western end of the lake, with a boat launch and public docks. There are several recreational and seasonally occupied cabins in the area as well as an 'outpost' cabin/camp belonging to the NND First Nation.

Historically, Ethel Lake has been used for subsistence, domestic, commercial, and recreational fishing. The lake was fished commercially at least as early as the 1930s (reference to caterpillar trains used to haul commercial fish harvests from Ethel) but commercial quotas (907 kg at the time) were retired in 1967 in order to minimize conflict with recreational fishing (Seigel and McEwen, 1984).

Ethel Lake and the surrounding area are particularly important to NND for fishing, hunting, gathering, and other traditional uses. The 2008-2013 Community-Based Fish and Wildlife Work Plan for the Na-cho Nyak Dun Traditional Territory identified Ethel Lake fish populations as a concern. More specifically, people were concerned that Ethel Lake may be over fished. The plan suggested that an angler harvest survey be conducted mid-plan.

The recreational fishery has been assessed on three previous occasions: 1990, 1995 (partial), and 2003. The 2012 survey was done to:

- determine how much time anglers spent fishing (effort);
- understand the fishery's characteristics and patterns of use;
- measure the success rate of anglers;
- compare the level of harvest to the productive capacity of the lake;
- record biological information on harvested fish;
- provide anglers with information about regulations; and
- establish a fisheries management presence.

Harvest Regulations

Ethel Lake has been managed with Conservation Water regulations since 1991. These regulations protect the larger spawning fish and encourage the harvest of smaller fish, while allowing the retention of a trophy fish if caught. Only barbless hooks are permitted. The catch limit for lake trout is two fish per day, all fish between 65 cm and 100 cm must be released, and only one lake trout larger than 100 cm may be kept. The possession limit is also two lake trout. For Arctic grayling the catch limit is 4 fish per day, all fish between 40 cm and 48 cm must be released, and only one grayling larger than 48 cm may be kept. The possession limit is also four Arctic grayling. For northern pike the catch

limit is 4 fish per day, all fish between 75 cm and 105 cm must be released, and only one northern pike larger than 105 cm may be kept. The possession limit is also four northern pike. General catch and possession limits apply to all other species. Appendix 1 shows the regulation history for Ethel Lake.

Methods

Survey

In 1990 the Yukon Government adopted survey methodology developed by the Ontario Ministry of Natural Resources (Lester and Trippel, 1985). A field worker conducts face-to-face interviews with anglers on selected sample days throughout the summer. The worker asks a standard set of questions about the social and biological aspects of the fishery. Data gathered include:

- How much time did anglers spend fishing?
- What fishing methods did anglers use?
- How did anglers fish (boat, shore, etc.)?
- Were anglers guided?
- Where were anglers from?
- What type of visitor were anglers (day users, campers, etc.)?
- What kinds of fish were anglers trying to catch?
- How many fish did anglers catch?
- How many fish did anglers release?

Any other information offered by anglers about their fishing experience is also recorded.

The field worker also collects biological data on the catch of cooperative anglers. Biological data gathered include: length (mm), mass (g), sex, maturity, scales or an otolith (a small bone from the fish's head) for aging, and stomachs for content analysis in the lab. Any other information about general health and condition of the fish is recorded by the field worker (e.g., abnormalities, disease, lesions).

The field worker subjectively assesses the weather's effect on fishing over the entire sample day (no possible adverse effect, possible adverse effect, definite adverse effect).

The timing of the survey depends on management objectives, key species, and the nature of the fishery. It typically runs from ice out in the spring until either just after Labour Day or the end of September. The goal is to do sampling on at least 20% of the total survey days. The survey is subdivided

into several seasonal periods (usually 3 or 4) to better understand changes in angler activity. These periods are further divided into weekends and weekdays. Each period has its sample days, with a higher weighting for those periods with the higher projected angler use and a minimum number of samples for each period.

Sample days are 14 hours long, 8:00AM to 10:00PM. On sample days, the field worker interviews all willing anglers. The field worker also records anglers who are observed but not interviewed.

Analysis

When the survey is finished, the data are entered into an Access database and analyzed using standard statistical methods. The age of sampled fish is determined by counting growth rings in the otolith. Diet is determined by examining the stomach contents.

Lake Productivity

The productivity of a lake determines the amount of fish produced annually and can guide how much harvest can be sustained. Estimates of lake productivity are calculated using average lake depth, the concentration of total dissolved solids, and the average annual air temperature at the lake. Ryder's morphoedaphic index (1974) is used and incorporated into Schlesinger and Regier's equation (1982) for calculation of maximum sustained yield (MSY) for all species. Calculation of MSY for lake trout assumes lake trout comprise 30% of the fish biomass in the lake; where appropriate this may be replaced by the most recent survey data. Following O'Connor (1982) and others, 15% of MSY provides an "optimum" sustained yield (OSY), which maintains high quality fisheries on light to moderately fished lakes.

2012 Ethel Lake Survey

The survey began June 1 (ice out) and ended on September 5, 2012.

We used an access survey methodology with the field worker stationed at the territorial campground and boat launch at the west end of the lake (Figure 1). The field worker spent the entire sample day at this location and interviewed angling parties at the end of their fishing trips. Careful observation of lake activity and occasional visits to the local cabins gathered information on angling use originating outside of the campground.

The survey period was divided into 6 time periods, weekends and weekdays in June, July and August/early September. During the 97 day survey period, the field worker sampled on 31 days, giving a sampling effort of 32%.

Data analysis was divided into two parts. In the first part, data were combined across all 6 time periods, and in the second part results were compared between time periods (Appendix 2). All data were grouped and analyzed by fishing party.

Results of the 2012 Survey

Effort

We estimate that 2,271 hours of angler effort (fishing time) were spent on Ethel Lake over the 2012 survey period. Altogether, 724 anglers in 327 parties fished on Ethel Lake for an average of 3.1 hours per angler. Fishing activity averaged 23.4 hours per day.

A lake-wide effort of 2,271 hours is an average angling effort for a Yukon fishery. Given the medium-large size of the lake, about 0.49 hours of angling effort were spent per hectare, also very near the median level of effort typical of Yukon lakes.

Fishing Methods

Trolling was by far the most popular method of fishing, followed by combinations of methods and spin casting (Table 1). Jigging and fly casting were also observed.

Table 1. Fishing methods.

Method of Fishing	Angling Parties (%)
Still	0
Jig	5
Drift	0
Troll	76
Spin Cast	8
Fly Cast	1
Other or Combination	10

Methods of Access

The majority of anglers used motorboats, while some anglers fished from canoes (Table 2). A few anglers used rowboats, fished from shore, and one party used a paddle boat.

Table 2. Angler access methods.

Method of Fishing	Angling Parties (%)
Canoe	10
Rowboat	3
Motorboat	83
Shore	3
Other	1

Guided Anglers

No anglers were formally guided on Ethel Lake in 2012.

Angler Origin

Most anglers were from Dawson City, followed by lower numbers of local anglers, Whitehorse anglers, and out–of-territory Canadian anglers (Table 3). There were a few European anglers and no American anglers.

Table 3. Angler origin.

Origin	Angling Parties (%)
Local	16
Whitehorse	13
Dawson	57
Canada	11
U.S.	0
Other (European)	4

Visitor Type

The vast majority of anglers were Territorial campground users (Table 4). Day users were the second highest group followed closely by users from the local cabins. A few parties camped on Crown land.

Table 4. Angler visitor type.

User Type	Angling Parties (%)
Day users	8
Camper – Territorial campground	86
Local cabins users	5
Camper – Crown land	1

Weather

Weather showed some adverse effect on fishing activity but many days had no effect on angling (Table 5).

Table 5. Sample day weather.

Did Weather Affect Angling?	Angling Parties (%)
No possible adverse effect	61
Possible adverse effect	29
Definite adverse effect	10

Catch and Harvest

Lake trout were by far the most heavily caught and harvested species with a 49% retention rate (Table 6). Low numbers of northern pike and Arctic grayling were caught with similar retention rates around 25%. A few lake whitefish were caught, all of which were kept.

Table 6. Angler catch and harvest.

	# Caught	# Kept	Retention Rate (%)
Lake trout	271	132	49
Northern pike	28	7	24
Arctic grayling	23	6	27
Lake whitefish	3	3	100

Estimated angler success rates, calculated over the entire survey as numbers of fish caught per hour of angling effort (CPUE), is presented for all anglers (regardless of target species) in Table 7.

Table 7. Estimated catch per unit of effort (fish/hour).

	CPUE
Lake trout	0.12
Northern pike	0.01
Arctic grayling	0.01
Lake whitefish	0.001

Biological Data

We sampled 34 lake trout for biological data. Mean fork length was 468 mm and mean weight was 1,465 g, suggesting a mean condition factor of 1.43. This is an excellent condition factor (relationship between length and weight) for lake trout in Yukon and indicates "fat" fish. The sex ratio in the samples was 1.6 males per female. Lake trout were sampled across a range of size classes from 362 to 790 mm; however a majority of fish sampled were small, falling well below the slot limit (Figure 2). Average length of sampled fish was 468 mm. A few slot limit fish were harvested by First Nation anglers. Of note, the surveyor reported that no released lake trout fell within the slot limit, with only one lake trout voluntarily released over the slot limit. Because young fish (less than 5 years) are not vulnerable to angling gear and regulation does not allow harvest of larger fish (with the exception of one very large trophy) these portions of the population are underrepresented in the sample.

Ages were available for 32 of the sampled lake trout, and ranged from 8 to 29 years old, with an average of 13.2 years (Figure 3).

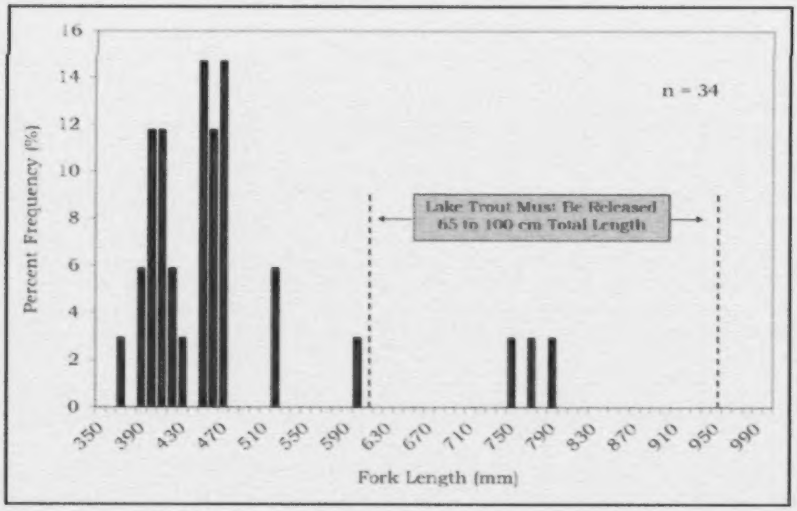

Figure 2. Lengths of lake trout caught by anglers.

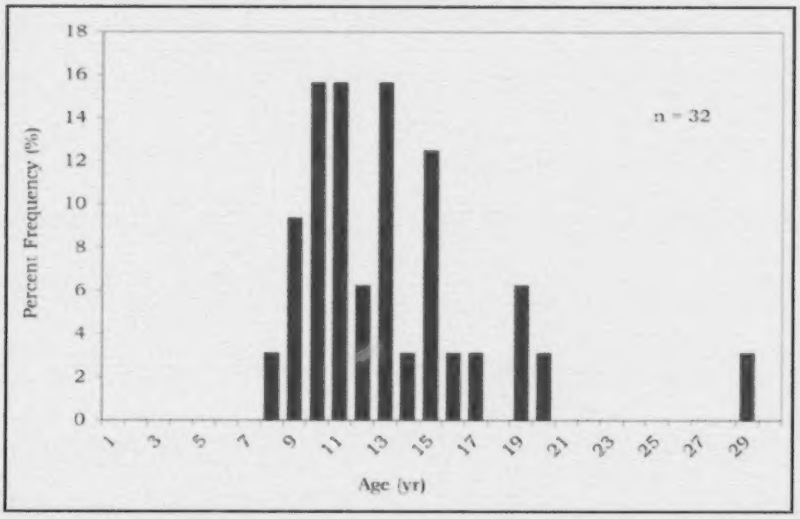

Figure 3. Ages of lake trout caught by anglers.

We examined 32 lake trout stomachs to analyze diet. Stomachs averaged 43.8% full. Invertebrates were by far the most common diet items identified, with fish (unidentified fish and slimy sculpin) comprising 26% of the diet (Table 8).

Table 8. Sampled lake trout stomach contents.

	Volume (%)
Non-Biting Midges	24
Scuds, Sideswimmers	23
Unidentified Fish	21
Caddisflies	14
Unidentified Invertebrates	8
Slimy Sculpin	5
Unknown	3
Ants	1
Water Fleas	1
Beetles	traces
Crane flies	traces
Orb snails	traces
Arachnids	traces
Unidentified vegetation	traces
Clams/Mussels	traces

Three Arctic grayling were sampled for biological data. Mean fork length was 393 mm and mean weight was 1,150 g. Two fish were aged at 4 and 6 years old. All stomachs were analyzed for diet and averaged 98% full. Contents were 96% unidentified invertebrates, 4% caddis flies, with traces of scuds/sideswimmers.

Two northern pike were sampled for biological data. Mean fork length was 581 mm and mean weight was 4,350 g. The smaller fish (522 mm, 1,100 g) was aged at 5 years old. Both stomachs were analyzed for diet. One was empty, and one was 70% full, containing 50% round whitefish and 50% unidentified fish.

One lake whitefish was sampled for biological data. Fork length was 450 mm, weight was 1,150 g, and it was aged at 12 years old. The stomach was not available for diet analysis.

Comparison with Previous Surveys

We completed previous angler harvest surveys on Ethel Lake in 1990, 1995 (partial), and 2003. These surveys are directly comparable with the 2012 survey with the caveat that the 1995 survey covered the first half of the season only and data was extrapolated to the full season for comparison; see rationale in Foos (2004).

Effort

Estimated summer open water angler effort shows a generally increasing trend over the past 22 years (Table 9). We estimate 2,271 angler hours of effort were expended over the 2012 survey. From 1990 to 1995, angler effort was approximately stable, increased by about 30% from 1995 to 2003, and then increased nearly 40% between 2003 and 2012.

Table 9. Total estimated angler hours.

	2012	2003	1995	1990
Hours	2,271	1,622	1,262	1,353

Fishing Methods

Fishing methods have shifted over the surveys (Table 10). Trolling is the dominant method, and has increased in popularity over the surveys, while spin casting has declined in popularity. Jigging was employed for the first time in 2012.

Table 10. Fishing methods of angling parties (%).

	2012	2003	1995	1990
Still	0	0	0	
Jig	5	0	0	
Drift	0	0	0	N/A
Troll	76	51	41	
Spin Cast	8	28	45	
Fly Cast	1	4	0	
Other or Combination	10	17	13	

Methods of Access

Methods of access show motorboats as the dominant method over the two most recent surveys (Table 11). In 2012 there was a shift to increasing numbers of motorboats and a corresponding decrease in shore fishing. These data are not available from 1995 or 1990.

Table 11. Methods of access of angling parties (%).

	2012	2003	1995	1990
Canoe	10	14		
Rowboat	3	1		
Motorboat	83	72	Data Not Available	
Shore	3	12		
Other	1	1		

Guided Anglers

Formally guided parties are rare at Ethel Lake with only one party observed in 2003. These data are not available from 1990.

Angler Origin

Angler origin has changed little between the two most recent surveys, with Dawson City angling parties (who make up a large majority of the Yukon category) dominating the two most recent surveys (Table 12). We were unable to separate the Yukon categories in the 1990 data, and 1995 was a partial survey. Mayo and Whitehorse origin parties have been roughly equal in all years except 2003 when Whitehorse parties were half as common. Recent surveys have shown fewer non-resident Canadian parties, and much fewer US residents (none in 2012) than in the early surveys. The 'other' category, largely Europeans, has remained similar and low over the surveys.

Table 12. Origin of angler parties (%).

	2012	2003	1995	1990
Local	16	20	19	
Whitehorse	13	8	20	57
Yukon	57	58	19	
Canada	11	7	27	17
U.S.	0	2	8	21
Other	4	5	8	5

Visitor Type

Visitor type has been dominated by campground users in all years for which data are available while the percentage of other users remains low (Table 13). Local cabin users were not formally separated out in surveys prior to 2012 and may have been miscategorised in 2003.

Table 13. Visitor type of angling parties (%).

	2012	2003	1995	1990
Day Users	8	4	9	
Camper – Territorial campground	86	96	67	N/A
Local cabin users	5		20	
Camper – Crown land	1			

Weather

The field worker subjectively evaluates the effects of the weather on fishing. A majority of days were good for fishing in 2012; slightly better than in 2003 and similar to 1995 (Table 14).

Table 14. Weather effects on angling parties (%).

	2012	2003	1995	1990
No possible adverse effect	61	50	50	
Possible adverse effect	29	25	50	N/A
Definite adverse effect	10	25	0	

Catch and Harvest

A very similar number of lake trout were caught in 2012 as in 2003; more fish than in 1995 but less than the high in 1990 (Table 15). However, the number of lake trout harvested in 2012 is the lowest of surveys to date, as a greater proportion (49%) of the catch was released. Of note, based on figure 2 and surveyor reports, it does not appear that lake trout were released because of the slot limit.

Northern pike catches in 2012 were much lower than all previous surveys, with a low retention rate similar to 2003 resulting in very few fish harvested (Table 15).

Arctic grayling catches in 2012 were also lower than all previous surveys and have shown a steady decline over the surveys. Retention rates and harvest remained low and similar to 2003 results.

Lake whitefish were only caught in 2012 and the few fish caught were all retained.

Table 15. Estimated number of fish caught, fish kept and the retention rate.

		2012	2003	1995	1990
Lake trout	Caught	271	268	194	379
	Kept	132	183	176	290
	Released	139	85	18	89
	% Kept	49	68	91	77
Northern pike	Caught	28	117	108	309
	Kept	7	23	39	177
	Released	21	94	69	132
	% Kept	24	20	36	57
Arctic grayling	Caught	23	33	64	126
	Kept	6	9	34	110
	Released	17	24	30	16
	% Kept	27	27	53	87
Lake whitefish	Caught	3			
	Kept	3			
	Released	0			
	% Kept	100			

Estimated CPUE (number of fish per angler hour) over the entire survey can reflect the changes in the fishery because it incorporates effort and catch. Dramatic decreases in CPUE for a particular species could indicate problems in terms of the health or status of the fish species in question.

Table 16. Estimated catch per unit of effort (fish/hour).

	2012	2003	1995	1990
Lake trout	0.12	0.17	0.14	0.28
Northern pike	0.01	0.07	0.07	0.23
Arctic grayling	0.01	0.02	0.04	0.09
Lake whitefish	<0.01			

Lake trout CPUE showed a large decline between 1990 and 1995. Trends since 1995 are less certain, with a possible slight decline since 2003 (Table 17). Current results are only slightly below the Yukon average (0.14 lake trout per hour fished) for lakes surveyed to date.

Although there appears to be a consistent downward trend in the CPUE data for species other that lake trout, these data should be treated with caution; usually these species receive only a small amount of fishing effort, and so there is a great deal of uncertainty associated with these estimates.

Fishery Sustainability

The sustainability of Ethel Lake fish populations has been a long standing concern, most recently expressed through the 2008-2013 Community-Based Fish and Wildlife Work Plan for the Na-cho Nyak Dun Traditional Territory. A lake trout population survey conducted on Ethel Lake in 2011 found that lake trout were at a lower density than expected compared to similar Yukon lakes, and the population was depleted in abundance (Jessup & Millar, in prep).

Using lake shape and local climactic conditions (see Methods - *Lake Productivity*), we estimate that Ethel Lake could sustain a total annual lake trout harvest of about 300 kg (total dissolved solids: 82 mg/L, mean annual air temperature: -4.2 °C, mean depth: 31 m). These predictions of sustainable yield are imprecise, so we attempt to minimize risk and maintain fishing quality by using conservative estimates. Further, the applicability of these estimates to depleted populations is not well understood, and productivity of the population will likely be lower until it recovers.

The estimated lake trout harvest (harvest estimate x mean weight) from the 2012 summer's angling is 224 kilograms (Table 17). This is slightly lower than the estimated harvest in 2003, higher than the low estimate in 1995, and well below the high estimate in 1990 (Table 17). The low harvest in 1995 was reflective of the much smaller average size of lake trout caught that year; more fish were actually harvested than in 2012, they just amounted to fewer kilograms. Estimates also include an additional harvest component based on an estimated live release mortality of 15%. We use this value for management purposes based on studies reviewed by the Yukon Fish and Wildlife Management Board (1998).

Table 17. Estimated summer lake trout harvest by anglers.

	2012	2003	1995	1990
Lake trout harvested	132	183	176	290
Lake trout released	139	85	18	89
Mortality of released fish (15%)	21	13	3	13
Total harvest and mortality	153	196	179	303
Mean Length (mm)	468.3	468.3	399.7	468.3
Mean weight (kg)	1.465	1.282	0.819*	1.775
Total harvest and mortality (kg)	224	251	147	538

*Estimate based on length-weight relationship from other Ethel Lake surveys.

Estimated harvest is a minimum estimate, as some fishing activity originating from the cabins may have eluded the surveyor, and there is likely some angling taking place in fall following the completion of the survey. Also, no formal harvest data are available for the winter ice fishing season, although anecdotal information suggests that winter angling effort and harvest are low. Finally, no harvest data are available for the First Nations subsistence fishery.

There are uncertainties associated with estimating sustainable yield and our estimate of harvest is incomplete. The 2012 survey results suggest that the estimated recreational angling harvest level should maintain current fishing quality in Ethel Lake. If combined subsistence and recreational harvest exceed 300 kg, lake trout harvest could exceed the level required to maintain the current fishery. A high level of harvest combined with the depleted lake trout population would be cause for concern for Ethel Lake as it could impede recovery.

Regular monitoring of the harvest from this fishery should continue as depleted lake trout stocks take many years to recover. In combination with harvest from the recreational fishery, harvest from the subsistence fishery should be quantified to ensure that the total harvest does not exceed a level that would impede recovery.

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APPENDIX 1 – Ethel Lake Angling Regulation Changes 1989 to 2012.

Year	Species	Catch limit	Possession limit	Size restrictions
1989/90*	Lake trout	5	10	none
	Arctic grayling	5	10	none
	Northern pike	5	10	none
	Whitefish	5	10	none
1990/91	Lake trout	3; 1 only over 80cm	6	Only one fish over 80cm
1991/92	Lake trout	2; none between 65 and 100cm	2	Only one fish over 100cm
	Arctic grayling	4; none between 40 and 48cm	4	Only one fish over 48cm
	Northern pike	4; none between 75 and 105cm	4	Only one fish over 105cm

*Yukon Government obtained responsibility for freshwater fisheries management from the Federal Government in 1989.

APPENDIX 2 – 2012 Results: Comparisons between periods.

Effort

Mean daily effort was much higher on weekends than weekdays in all periods (Figure 2.1). Weekend effort was highest on July weekends and much lower on August/early September weekends. Weekday effort declined over the periods, with the highest levels of effort in June. This is a typical pattern seen in Yukon lake trout fisheries.

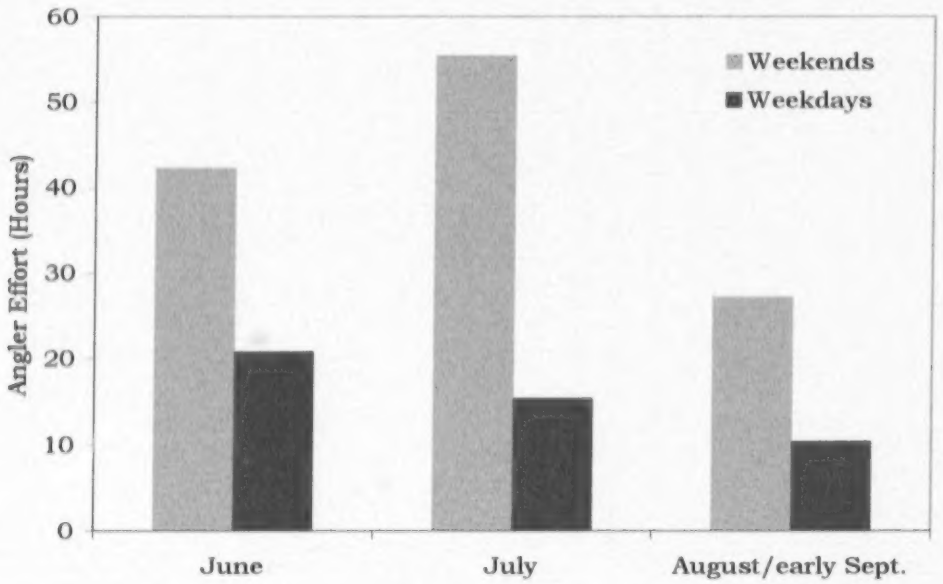

Figure 2. 1. Estimated angler effort per day, Ethel Lake.

Fishing Methods

Fishing methods were dominated by anglers trolling in all periods. Jigging was only observed on June and July weekdays, while spincasting was not observed on weekdays in any periods. Fly-fishing was only observed on August/early Sept. weekends.

Guided Anglers

There were no guided anglers observed in any period.

Angler Origin

Dawson City anglers were present in all periods except August/early Sept. weekdays, with high numbers on weekends. Local and Whitehorse anglers were not observed in either August/early September period, while non-resident Canadians were observed only on weekends in all periods. European parties

were only observed on June weekends and August/early September weekdays. There were no U.S. anglers observed over the survey.

Visitor Type

Government campground users were present in all periods except August/early September weekdays. Day users were present in both June periods, July weekends, and August/early September weekdays. Local cabin users were observed on both June periods and July weekends. Crown land campers were only observed on July weekends.

Catch

Lake trout CPUE was reasonably consistent across all summer periods with weekdays slightly better than weekends in June and August/early September (Table 2.1). This is likely due to higher numbers of inexperienced anglers on weekends. Northern pike were only caught on weekends with low CPUE in all periods, but very low in July. Arctic grayling and lake whitefish were caught sporadically and with low success.

Catch per unit effort patterns for lake trout on Ethel Lake are not consistent with typical Yukon summer patterns. Success is typically higher in spring following ice out and then drops over mid-summer as water temperatures warm. Fall increases are often seen related to onset of spawning and cooling water temperatures. In Ethel Lake we observed a consistent CPUE over the whole summer. The reason for this pattern is not clear.

Table 2.1. Estimated catch per unit of effort (fish/hour) by period.

	Lake Trout	Northern Pike	Arctic Grayling	Lake Whitefish
June weekends	0.09	0.05		0.01
June weekdays	0.15		0.04	
July weekends	0.12	<0.01	0.01	
July weekdays	0.08			
August/September weekends	0.11	0.02	0	
August/September weekdays	0.17			